930A COMMUNICATIONS TEST SET
QUICK REFERENCE GUIDE

SAGE INSTRUMENTS

SAGE INSTRUMENTS

930A COMMUNICATIONS TEST SET
QUICK REFERENCE GUIDE

Rev. 4.0
05/01/95

SOFTWARE VERSIONS 4.05 AND HIGHER

SAGE INSTRUMENTS
240 AIRPORT BOULEVARD
FREEDOM, CA 95019-2614
TEL: (408) 761-1000
FAX: (408) 761-1008

SAGE INSTRUMENTS

930A COMMUNICATIONS TEST SET
QUICK REFERENCE GUIDE

Rev. 1.0
06/01/99

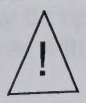
SOFTWARE VERSIONS 4.03 AND HIGHER

SAGE INSTRUMENTS
340 AIRPORT BOULEVARD
FREEDOM, CA 95019-3814
TEL: (408) 761-1000
FAX: (408) 761-1002

Table of Contents

Preparations for use 1
Operation 2
Trunk Type Function Key 5
Dial/Ring Function Key 10
Return Loss Function Key 11
Send Tone Function Key 12
Measure Tone Function Key 13
Measure Noise Function Key 14
Option Menu Function Key 15
Digital Test Connections 18
Configurator Panels 24

1-1 PREPARATIONS FOR USE



The 930A is designed to operate on 115 VAC, 60 Hz power or when equipped, 220 VAC 50 Hz. Connection to a power source other than this will cause damage to the 930A.

Do not interrupt the protective (ground) conductor (inside or outside the instrument), or disconnect the protective earth terminal as this can make the instrument an electrical shock hazard.

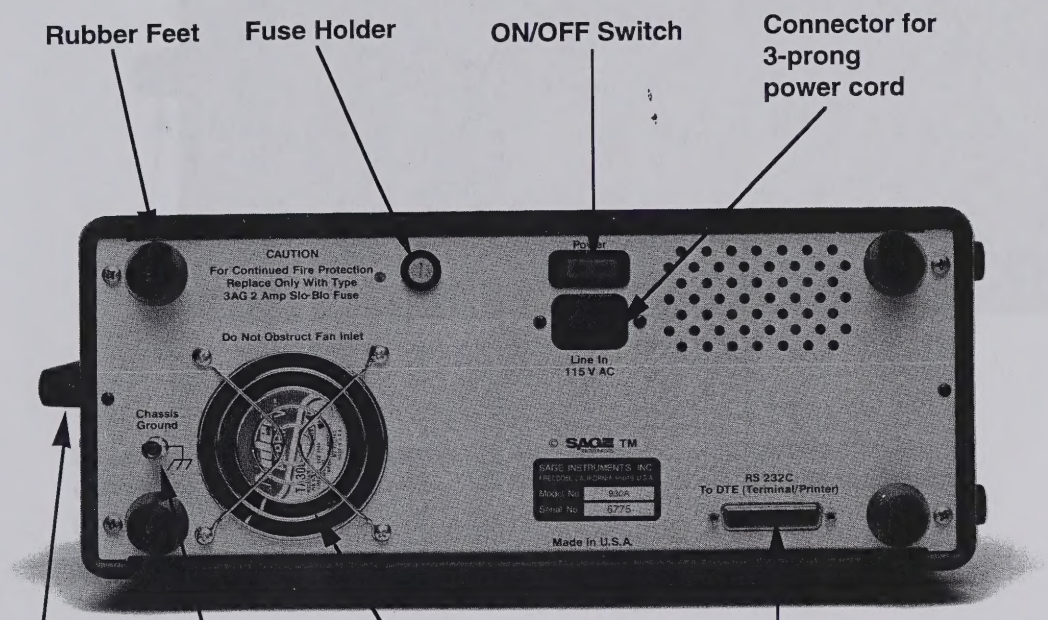
Calibration on the 930A should be performed at least once a year, and must be performed after replacing any circuit boards. Before calibrating, call Sage Instruments' Customer Service Department and ask for a 930A Calibration Manual.

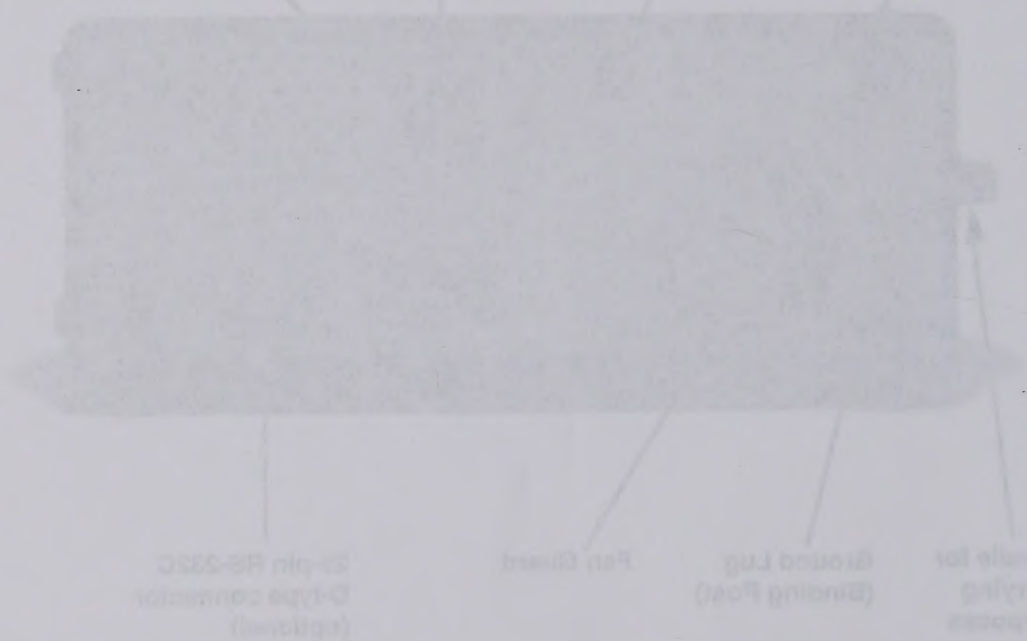
1-2 OPERATION

The 930A may be operated in temperatures from 0° C to 50° C (+32° F to +122° F) and will operate in environments with 10–90% relative humidity, non-condensing, at +40° C (104° F).

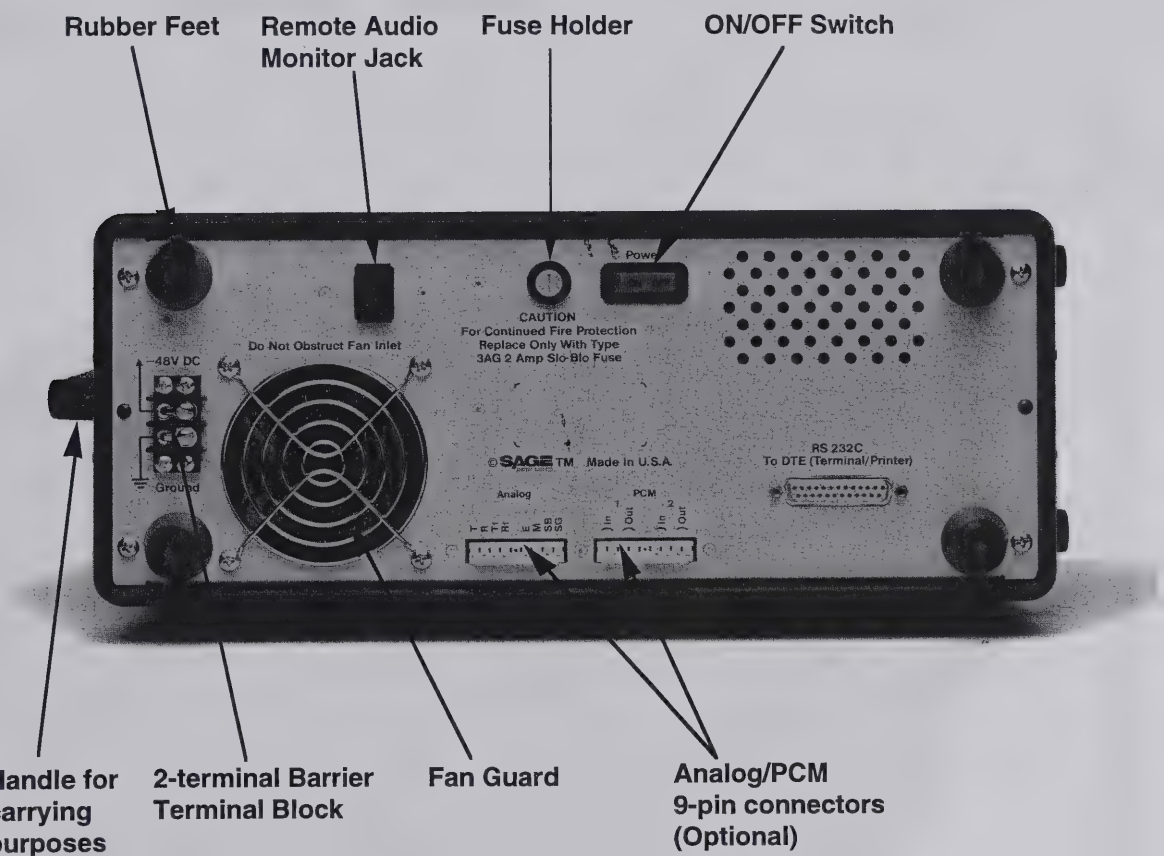
1-2.1 AC Rear Panel

The 930A rear panel measures 5" x 13.5":

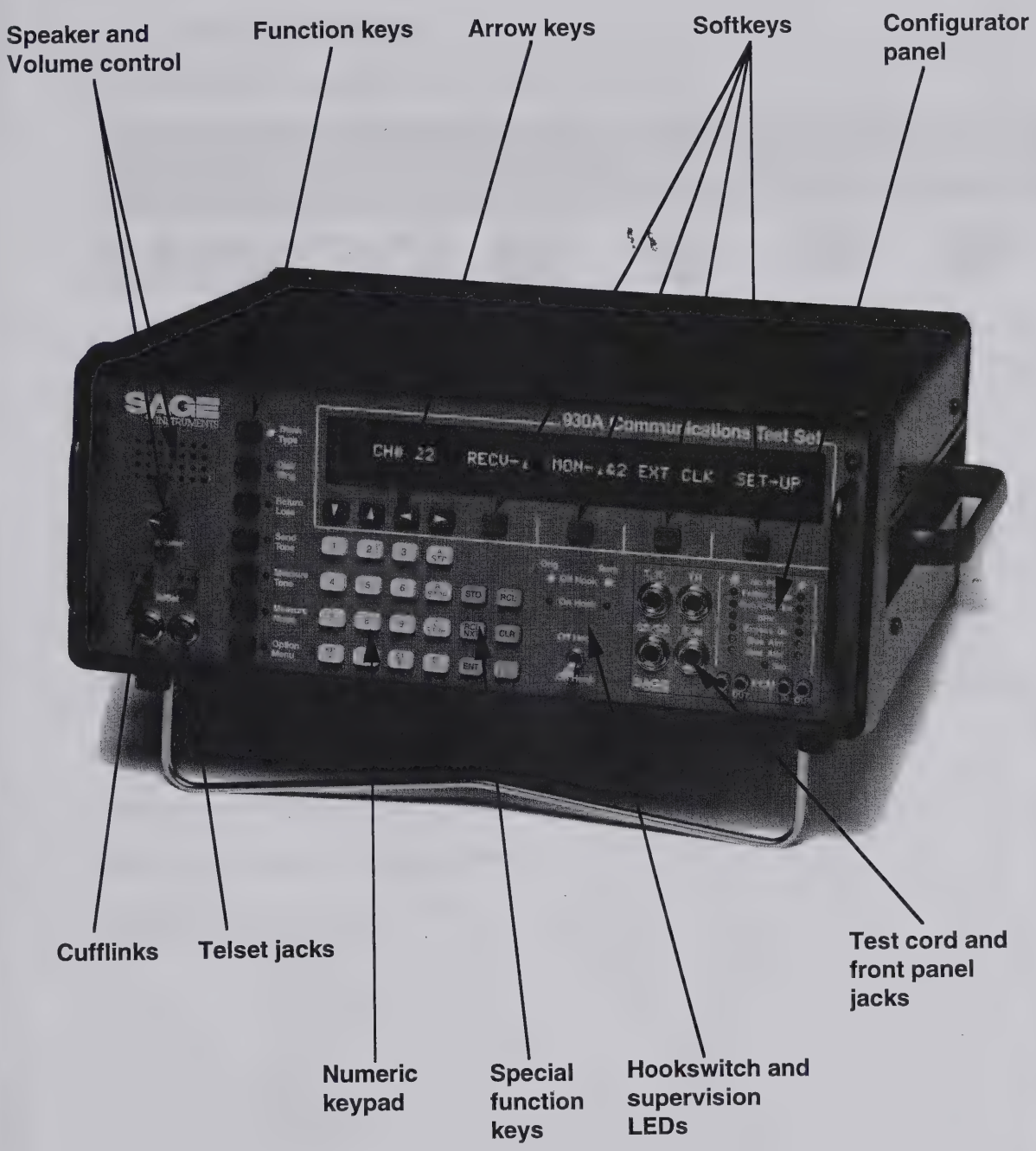




1-2.2 DC Rear Panel



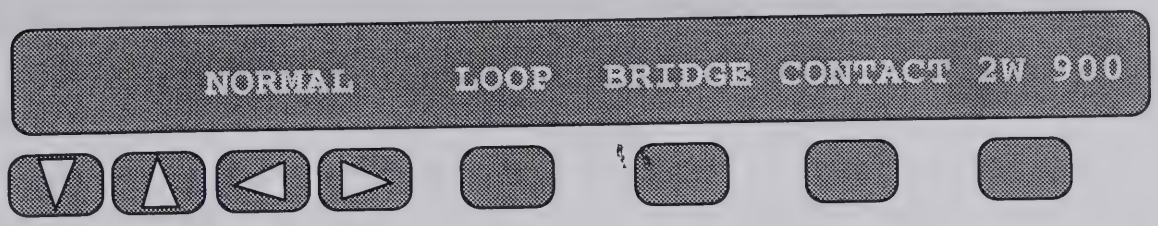
1-2.3 Front Panel



2-0 TRUNK TYPE FUNCTION KEY

2-1 Trunk Type Parameters

The following screen displays the 930A default Trunk Type:



The Up/Down arrow keys and softkey 1 scroll through nine other Trunk Type combinations. As the Trunk Type changes, for example, from **NORMAL** to **E&M**, the parameters associated with each Trunk Type will also change:

NORMAL	LOOP	BRIDGE	CONTACT	2W 900
REVERSE	LOOP	BRIDGE	CONTACT	2W 900
NORMAL	GND-ST	BRIDGE	CONTACT	2W 900
REVERSE	GND-ST	BRIDGE	CONTACT	2W 900
	E&M I	BRIDGE	SEND-M	2W 900
	E&M II	BRIDGE	SEND-M	2W 900
	E&M III	BRIDGE	SEND-M	2W 900
	E&M IV	BRIDGE	SEND-M	2W 900
	E&M V	BRIDGE	SEND-M	2W 900
OPTIONAL TYPES:		PCM	SF	WIDEBAND

BRIDGE mode toggles with **TERM** (terminate) mode.

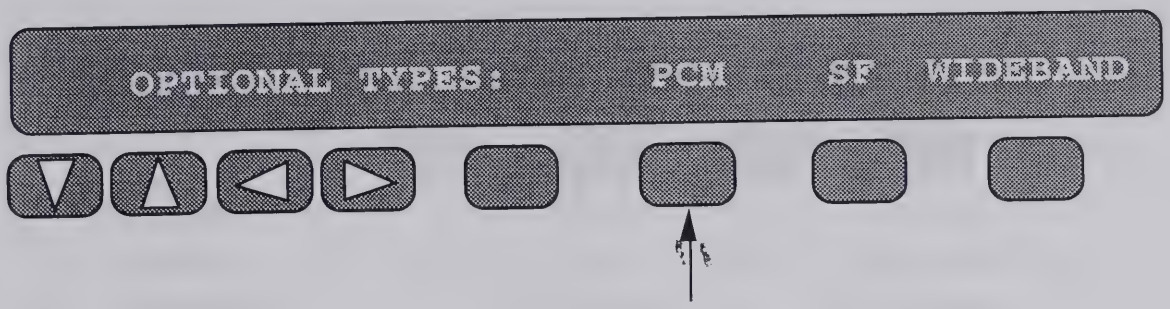
CONTACT mode toggles with **BATT** (battery) mode.

SEND-M mode toggles with **SEND-E** mode.

Impedance parameters are as follows:

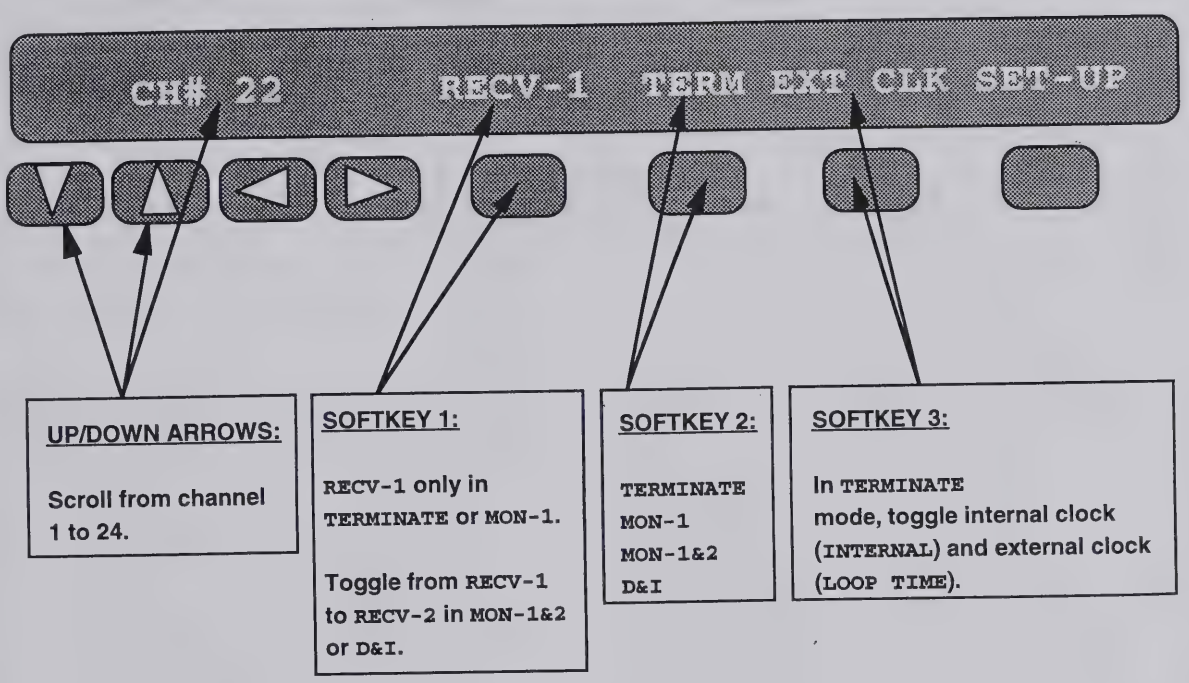
2W 150
2W 600
2W 900
2W 1200
4W 150
4W 600
4W 900
4W 1200

2.1 Optional Trunk Types



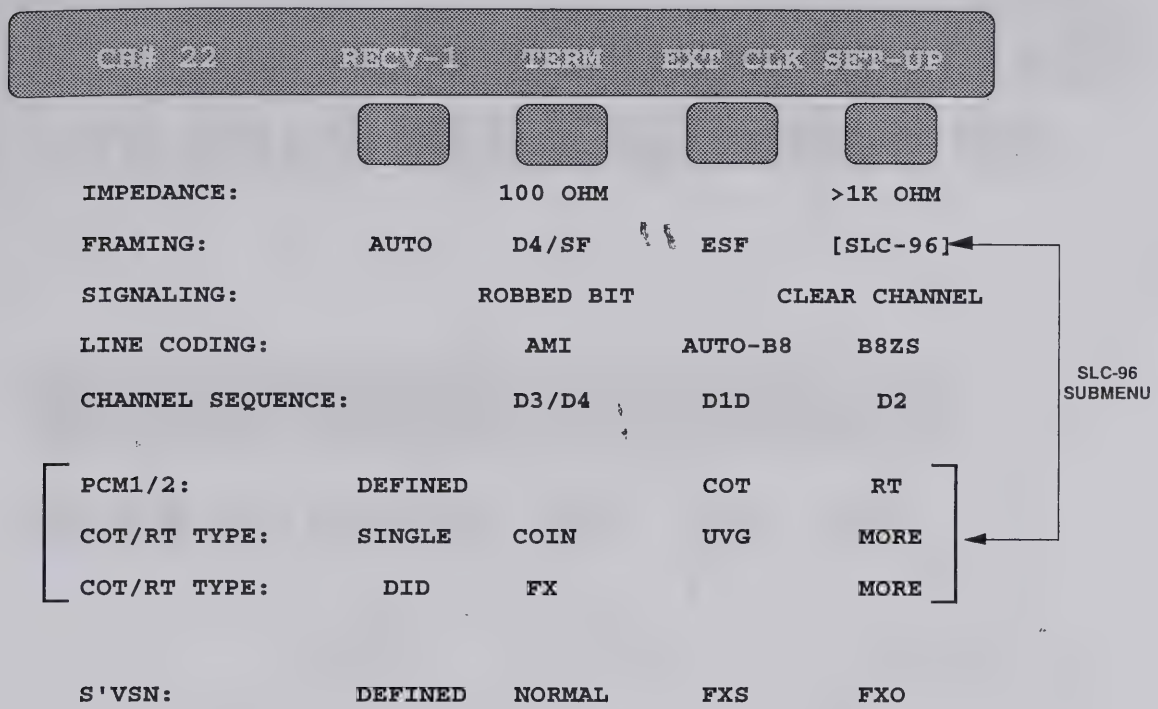
2-1.1 PCM Trunk Type

The following screen displays the 930A default Trunk Type in PCM mode:

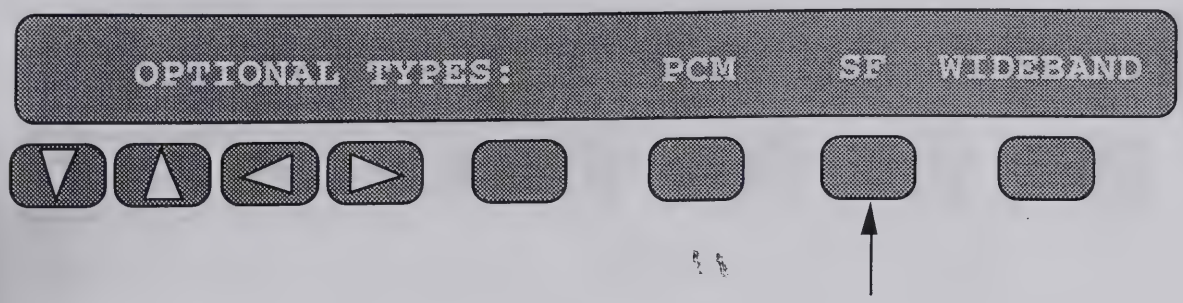


The following page illustrates selections under **SET-UP** in PCM mode.

PCM mode **SET-UP**



2-1.2 SF Trunk Type



SOFTKEY 2:

Toggle SEND TR to SEND T1R1

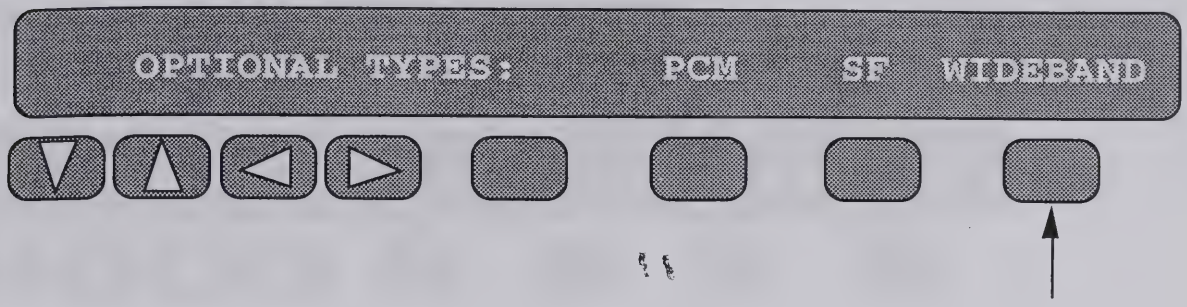
SOFTKEY 3:

Toggle BRIDGE to TERM

SOFTKEY 4:

4W 135/150
4W 600
4W 900
4W 1200

2-1.3 Wideband Trunk Type



SOFTKEY 1:

Toggle BRIDGE to TERM

SOFTKEY 2:

TR 135
TR 600
TR 900
TR 1200

SOFTKEY 3:

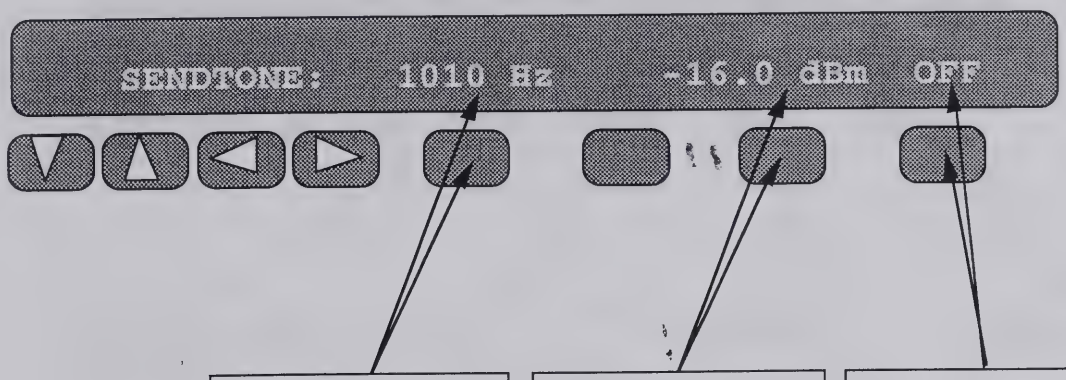
If T1R1 is enabled, toggle BRIDGE to TERM.

SOFTKEY 4:

T1R1 OFF
T1R1 135
T1R1 600
T1R1 900
T1R1 1200

5-0 SEND TONE FUNCTION KEY

The following screen displays the 930A default **Send Tone** screen:



SOFTKEY 1:

Activates cursor

Use numeric keypad to enter frequencies:

Frequency range for Analog Trunk Types:
`20 to 5000 Hz.`

Frequency range for PCM Trunk Type:
`20 to 3904 Hz.`

Frequency range for Wideband Trunk Type:
`20 Hz to 300 kHz.`

SOFTKEY 3:

Activates cursor

Use numeric keypad to enter level:

Level range for Analog Trunk Types, including Wideband:
`-60 to +12 dBm.`

Level range for PCM Trunk Type:
`-60 to +3 dBm.`

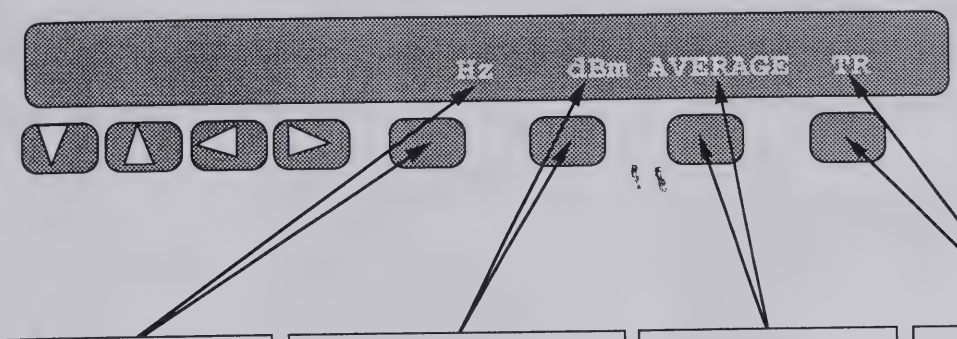
SOFTKEY 4:

Toggles between `OFF` and output jacks:

`TR`
`T1R1`
`PCM`

6-0 MEASURE TONE FUNCTION KEY

The following screen displays the 930A default **Measure Tone** screen:



DISPLAYS MEASURED FREQUENCY

SOFTKEY 2:

Scrolls through measurement types:

`dBm` - absolute
`dB` - measured relative
`dBm0` - entered relative

Use numeric keypad to enter 0 reference point: valid range is +99.9 to -99.9 dBm0.

SOFTKEY 3:

Toggles `AVERAGE` and `RMS`.

DISPLAYS INPUT SOURCE.

`TR`
`T1R1`
`PCM`

8-2 OPTION MENU NUMBERS AND PURCHASED OPTION NUMBERS

The following chart illustrates the 930A's internal options. In addition, 930A *Purchased Options* are listed with their corresponding internal Option Menu Numbers.

Purchased Options Numbers and Internal Option Menu Numbers do not correspond. For example, (internal) Option Menu # 11 is effective when Purchased Option 930A-07 is installed.

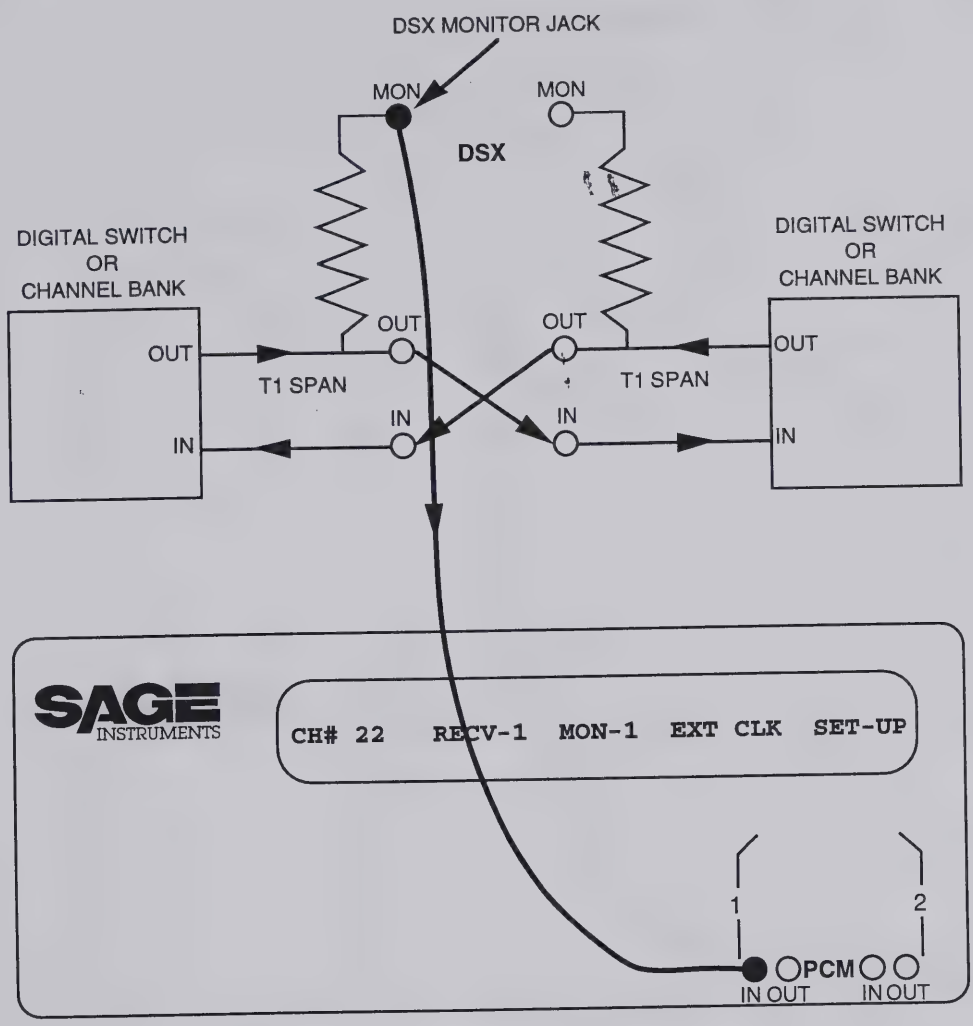
Option Menu # (Internal)	Description	Purchased Option Number
1	MODIFY DIAL/RING	STANDARD
2	SEND DIGIT SEQUENCES	STANDARD
3	REMOTE CONTROL	PURCHASED OPTION 930A-10C
4	DIGIT RECEIVER	PURCHASED OPTION 930A-01
5	RING LOAD	PURCHASED OPTION 930A-13
6	DC VOLT/AMP METER	STANDARD
7	SUPERVISION THRESHOLDS	STANDARD
8	SUPERVISION MONITOR	STANDARD
9	WINK TIMING	STANDARD
10	FREQUENCY SWEEP	STANDARD
11	IMPULSE NOISE & HITS	PURCHASED OPTION 930A-07
12	WINK MARGINING	PURCHASED OPTION 930A-01
13	PHASE/AMPLITUDE JITTER	PURCHASED OPTION 930A-18
14	SET TIME AND DATE	PURCHASED OPTION 930A-10C
15	BEEP ON ERR?	STANDARD
16	DIGIT RECEIVER TIMEOUT	PURCHASED OPTION 930A-01
17	ENVELOPE DELAY DISTORTION	PURCHASED OPTION 930A-19
18	P/AR RATIO	PURCHASED OPTION 930A-06
19	4-TONE INTERMODULATION	PURCHASED OPTION 930A-20
20	24 BIT DISPLAY	PURCHASED OPTION 930A-8E, 9E
21	TOGGLE A/B BITS	PURCHASED OPTION 930A-8E, 9E
22	ABSOLUTE DELAY	PURCHASED OPTION 930A-21
23	SLC-96 CONTROL BITS	STANDARD
24	POST TPT DELAY	PURCHASED OPTION 930A-12
25	FAR END RESPONDER	PURCHASED OPTION 930A-12
26	ROTL/RESPONDER	PURCHASED OPTION 930A-12
27	ROTL INTERROGATOR	PURCHASED OPTION 930A-12
28	NOT INSTALLED	
29	CALL 102 LINE	PURCHASED OPTION 930A-29
30	ADJUST TLP	STANDARD
31	SEND HOOK FLASH	STANDARD
32	DIAL-UP TESTLINE	STANDARD
33	DIAL-UP SWEEP	STANDARD
34	SELECT REPORTS	PURCHASED OPTION 930A-10
35	DUAL TONE SENDER	STANDARD
36	NOT INSTALLED	
37	LINE STATUS	PURCHASED OPTION 930A10C
38	NOT INSTALLED	
39	REMOTE AUDIO	PURCHASED OPTION 930A-47
40	SEND PCM ALARMS	PURCHASED OPTION 930A-8E, 9E
41	READ T1 VOLTAGE	PURCHASED OPTION 930A-8E, 9E
42	T1 WANDER	PURCHASED OPTION 930A-8E, 9E
43	T1 ERROR COUNTERS	PURCHASED OPTION 930A-8E, 9E
44	T1 ERROR HISTORY	PURCHASED OPTION 930A-9E
45	T1 ERROR INJECT	PURCHASED OPTION 930A-9E
46	DS-1 BIT ERROR RATE	PURCHASED OPTION 930A-22

47	APS TEST	PURCHASED OPTION 930A-22
48	CSU EMULATION	PURCHASED OPTION 930A-44
49	NOT INSTALLED	
50	BATCH MODE	PURCHASED OPTION 930A-29
51	TEST RESULTS	PURCHASED OPTION 930A-29
52	NOT INSTALLED	
53	NOT INSTALLED	
54	DCS INTERFACE	PURCHASED OPTION 930A-45
55	FRACTIONAL T1 BERT	PURCHASED OPTION 930A-24, 34
56	DS-0 BIT ERROR RATE	PURCHASED OPTION 930A-22
57	DS-0 LOOPBACK	PURCHASED OPTION 930A-22
58	DDS BIT ERROR RATE	PURCHASED OPTION 930A-24, 34
59	NOT INSTALLED	
60	NOT INSTALLED	
61	NOT INSTALLED	
62	NOT INSTALLED	
63	NOT INSTALLED	
64	NOT INSTALLED	
65	GND-ST COIN PHONE	STANDARD
66	NOT INSTALLED	
67	NOT INSTALLED	
68	NOT INSTALLED	
69	NOT INSTALLED	
70	NOT INSTALLED	
71	NOT INSTALLED	
72	NOT INSTALLED	
73	NOT INSTALLED	
74	NOT INSTALLED	
75	REMOTE UPGRADE	STANDARD
76	NOT INSTALLED	
77	NOT INSTALLED	
78	NOT INSTALLED	
79	NOT INSTALLED	
80	KEYBOARD LOCKOUT	STANDARD
81	NOT INSTALLED	
82	NOT INSTALLED	
83	NOT INSTALLED	
84	NOT INSTALLED	
85	NOT INSTALLED	
86	NOT INSTALLED	
87	TPT BURST LENGTH	PURCHASED OPTION 930A-12
88	NOT INSTALLED	
89	PRINTER HAND SHAKE	PURCHASED OPTION 930A-10
90	DSP MEMORY TEST	PURCHASED OPTION 930A-01
91	SOFTWARE VERSION	STANDARD
92	SOFTWARE COLD-BOOT	STANDARD
93	TEST DISPLAY	STANDARD
94	LIST OPTIONS	STANDARD
95	DRY CIRCUIT	STANDARD
96	TEST EXTENDED RAM	PURCHASED OPTION 930A-32
97	HOLD CONTROL	STANDARD
98	ESF BOARD SOFTWARE VERSION	PURCHASED OPTION 930A-8E, 9E
99	NOT INSTALLED	

Option Menu Numbers listed as NOT INSTALLED are reserved for future expansion.

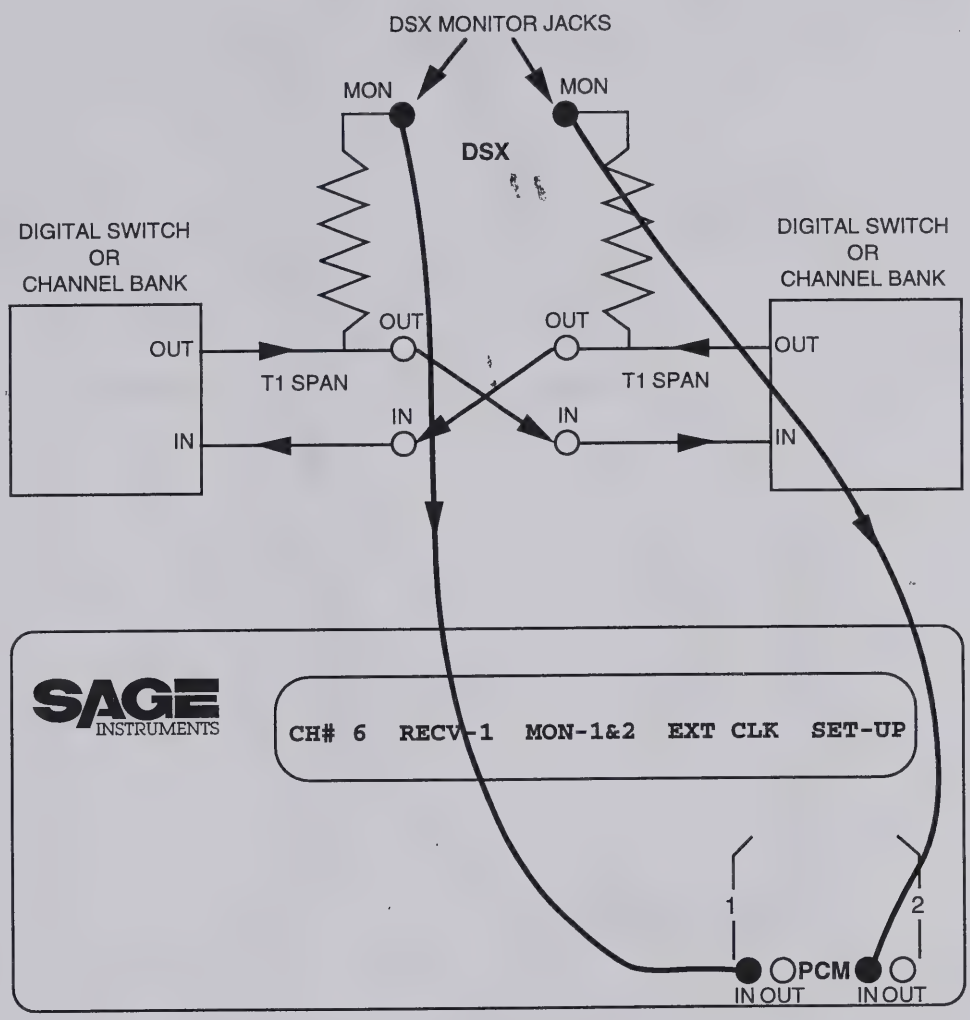
9-0 DIGITAL TEST CONNECTIONS

9-1 Single Direction Monitoring on a T1



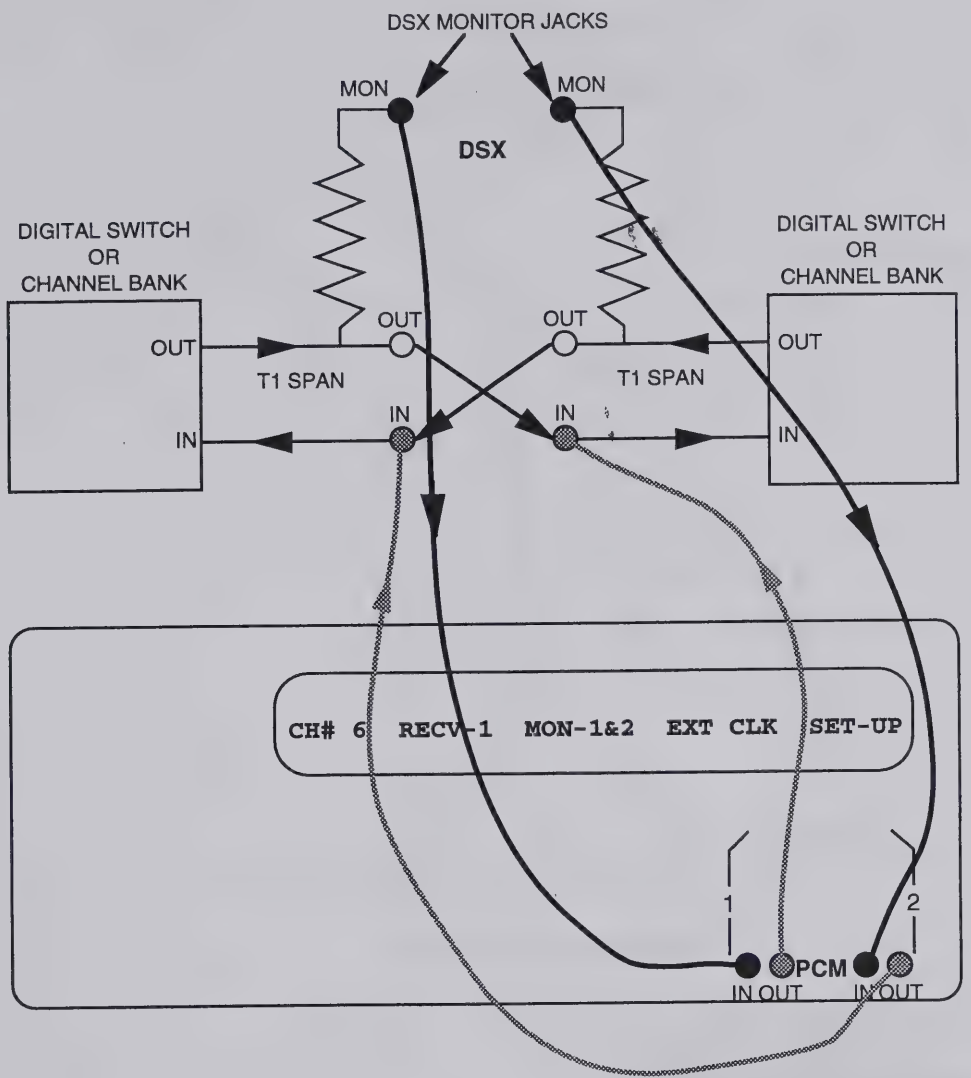
PCM MODE: MON-1

9-2 Dual Direction Monitoring on a T1



PCM MODE: MON-1&2

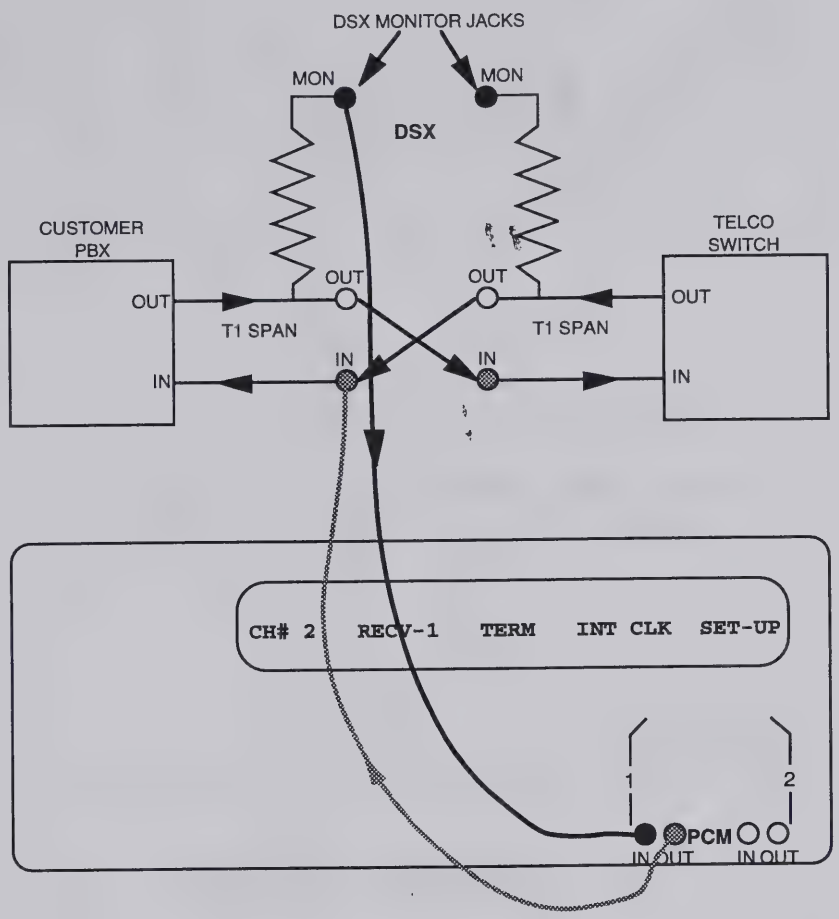
9-3 Drop and Insert Testing on a T1



PCM MODE: MON-1&2 OR D&I

100 OHM TERMINATION PLUGS ARE REQUIRED!

9-4 Out of Service Testing on a T1

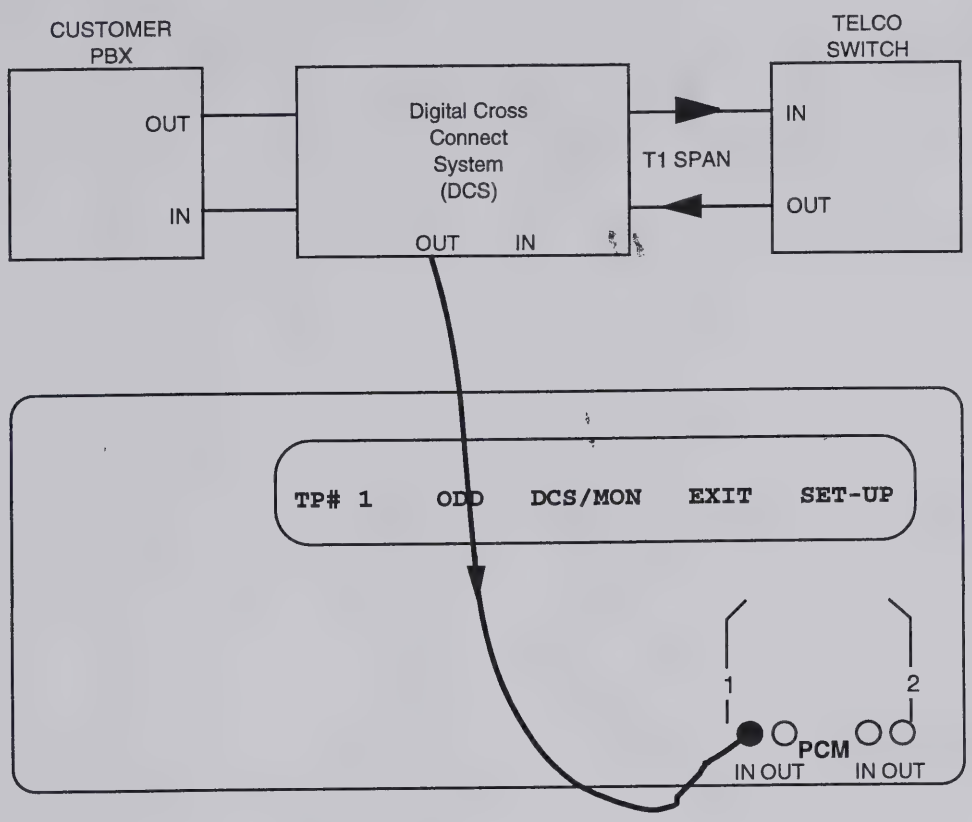


PCM MODE: TERMINATE

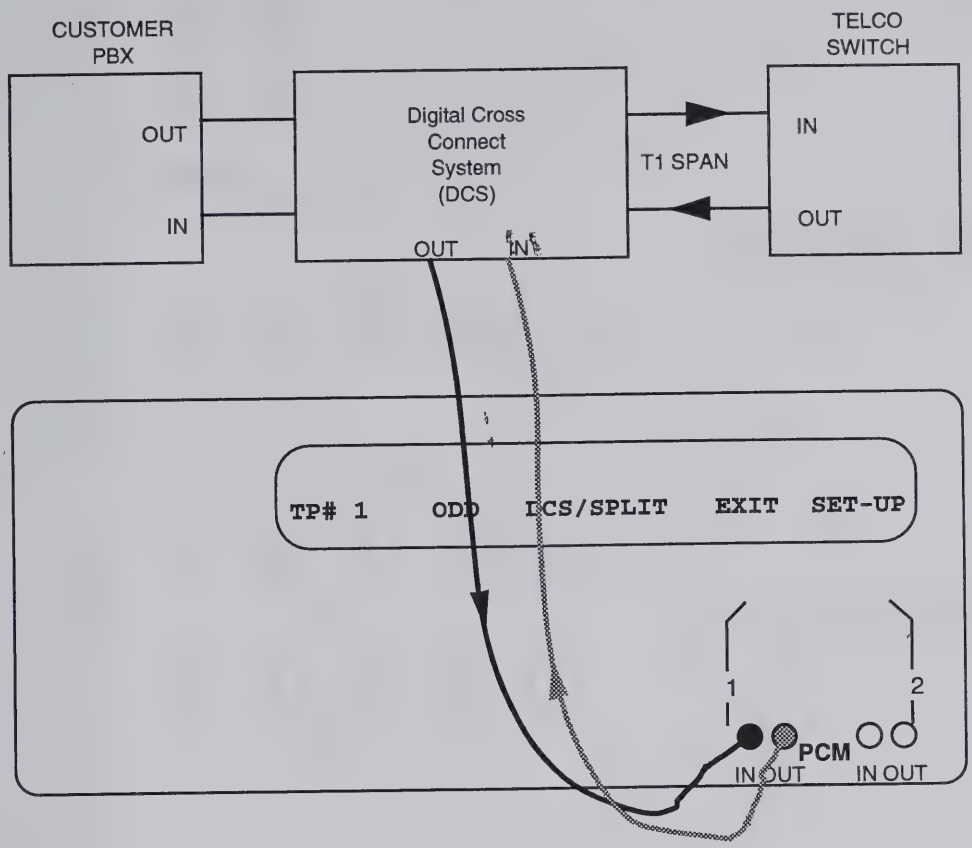
100 OHM TERMINATION PLUGS ARE REQUIRED!

THE TELCO SWITCH MUST "BUSY OUT" THE SPAN AT ITS END, OR CALLS WILL BE DROPPED.

9-5 Testing with a Digital Cross Connect System

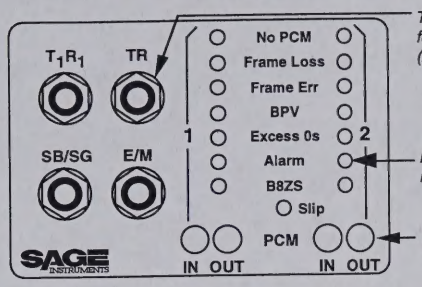


DCS MODE: MONITOR



DCS MODE: SPLIT

10-0 CONFIGURATOR PANELS

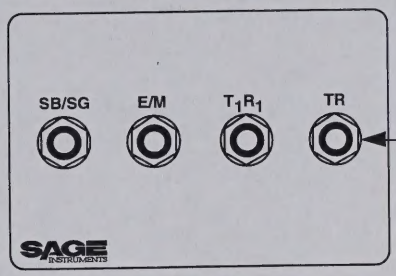


Type "310" jack for Metallic (Analog) Trunks

LEDs for T1 PCM Monitor

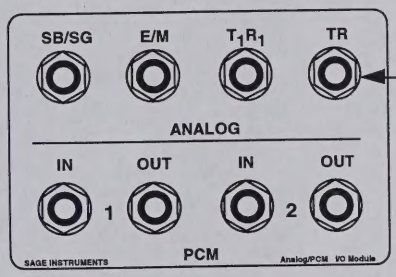
"Bantam" jacks for T1 PCM Trunks

The **A/P Annunciator** is the standard configurator for analog and PCM units.



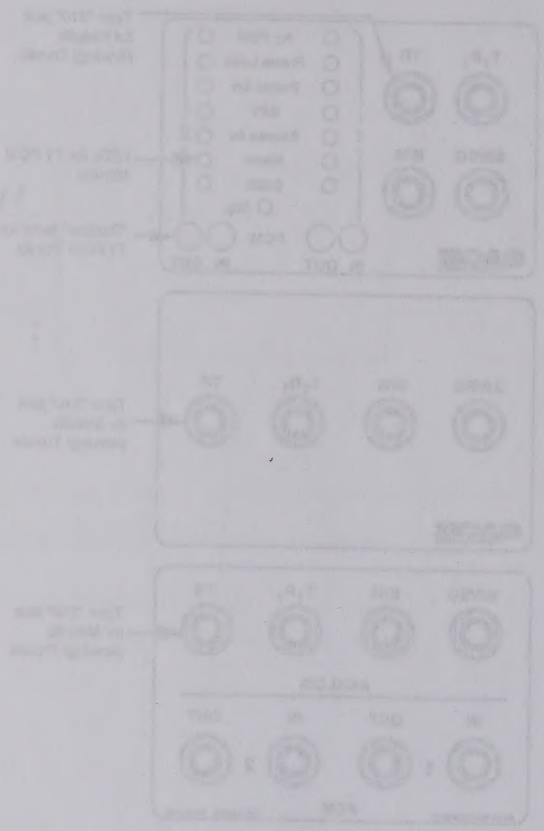
Type "310" jack for Metallic (Analog) Trunks

The **Analog Configurator** is the standard configurator for analog only units unless the 310/AP Configurator has been specified.



Type "310" jack for Metallic (Analog) Trunks

The **310 A/P Configurator** is available for PCM operation without "Bantam" jacks.




Amberg®
ESSELTE
58806
MADE IN U.S.A.
0 78787 58806 6